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# Multi-engine Horn Clause Prolog

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## Abstract

We extend Horn Clause Prolog with two new primitives, `new_engine` (+Goal, +Answer, -Engine) and `new_answer` (+Engine, -Answer) for creating and exploring answer spaces of multiple interpreters (engines). We show that despite its ontological parsimony, the resulting language is comparable in practical expressiveness with conventional full Prolog, by allowing compact definitions for negation, if-then-else, all solution predicates, I/O and reflective meta-interpreters. While not really needed anymore as a workaround for the lack of expressiveness of pure Prolog, a form of dynamic database operations can be emulated as well, using the state of multiple engines. With multiple engines laying the foundation for multi-threaded execution models of logic programming languages, the surprising result that a minimal extension of Horn Clauses (with LD resolution) in fact bridges the gap to full Prolog, is significant as a basis for lightweight implementations of embeddable logic programming components. Our constructs have been used in the design of small footprint mobile code interpreters for a commercial multi-threaded agent programming language - Jinni - available from <http://www.binnetcorp.com/Jinni>".

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